

Claims:

1.-10. (cancelled).

11. (currently amended) A process for producing single-crystal structures from metallic superalloys, comprising:

providing a substrate with a single-crystal structure, the substrate comprising at least one structure defect;

applying a metallic intermediate layer ~~where no single-crystal or directional structure occurs on the substrate;~~ and

epitaxially growing a single crystal buildup layer material on the intermediate layer, the single crystal buildup layer being isolated from the at least one structure defect of the substrate by the intermediate layer;

wherein the intermediate layer is applied with a non-directional microstructure.

12. (previously presented) The process as claimed in claim 11, wherein the single crystal structure is a component, a workpiece, a blade, or a vane.

13. (previously presented) The process as claimed in claim 11, wherein the substrate has a plurality of single-crystal structures.

14. (currently amended) The process as claimed in claim 11, wherein a heat treatment transforms at least part of the intermediate layer ~~with the substrate~~ into a region having a crystalline structure together with the substrate.

15. (currently amended) The process as claimed in claim 11, wherein a heat treatment transforms at least part of the intermediate layer ~~with the layer material~~ into a region having a crystalline structure together with the buildup layer.

16. (previously presented) The process as claimed in claim 11, wherein the intermediate layer is generated electrochemically.

17. (cancelled).

18. (cancelled).

19. (previously presented) The process as claimed in claim 11, wherein the intermediate layer is applied via a material application process different from a material application process used to apply the single crystal buildup layer.

20. (previously presented) The process as claimed in claim 11, wherein a composition ratio of constituents for the intermediate layer is adapted to a main composition ratio of main constituents of the substrate.

21. (previously presented) The process as claimed in claim 11, wherein a material composition of the intermediate layer corresponds to a material composition of the substrate.

22. (previously presented) A component formed from a metallic superalloy, comprising:
a substrate comprising a single-crystal structure;
a metallic intermediate layer having no single-crystal or directional structure applied to the substrate; and
a third layer material with a single-crystal structure formed on the intermediate layer.

23. (previously presented) The component as claimed in claim 22, wherein a composition of the intermediate layer material corresponds to a material composition of the substrate.

24. (previously presented) The component as claimed in claim 22, wherein the intermediate layer is generated electrochemically.

25. (previously presented) A process for producing metallic single crystal structures from metallic super alloys, comprising:

providing a substrate with a single crystal structure comprising a structure defect at a surface of the substrate; and

depositing on the surface of the substrate a single crystal material overlayer made by epitaxial growth of a layer applied by a first material application process;

characterized in that:

a metallic intermediate layer is applied to the surface of the substrate at least on the structure defect prior to the deposition of the overlayer, wherein no single crystal or directionally grown structure is present in the intermediate layer; and

wherein the intermediate layer is applied by a second material application process different than the first material application process such that the structure defect at the surface of the substrate is not copied into the intermediate layer;

wherein the overlayer is epitaxially grown on the intermediate layer without the structure defect.

26. (previously presented) The process of claim 25, wherein the second material application process comprises an electro-deposition process.